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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/974,748

Applicant(s)

BINA, ET AL.

Examiner

Christopher P. Heinrichs

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 6 recites the limitation "said tone disabler circuit" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Statutory Invention Registration #H1,884 to Pruett et al.

3. With regard to claims 1 and 2, Pruett discloses an apparatus for processing a telecommunication signal comprising a first signal processor (fig 3 item 310 in leftmost item 302, an element internal to fig 6, rightmost item 648) for performing a signal processing function (col 5 lines 8-11) upon a telecommunication signal (channel from wireless user, col 11 lines 57-61), in accordance with a signal processing parameter (echo canceller algorithm variables, col 11 lines 67 – col 12 line 1), and for producing a first processed telecommunication signal (communications channel with cancelled echo, col 11 lines 58-60); a first controller (controller of signal processing module, col 11 lines 65-66, illustrated in fig 3 as item 314 in leftmost item 302) connected with the first signal processor for monitoring the value of the signal processing parameter (col 7 lines 46-50, wherein the controller monitors as a prerequisite to the function "retrieve"); a system controller (combination of fig 3 items 306 and 304, illustrated also as fig 6 items 649 and 642) connected for receiving the telecommunication signal (signal enters over telecommunications lines at interface module, col 10 lines 1-6, and then passes to the switching module portion of the system controller as described in col 9 lines 31-35), the system controller connected with the first processor for transmitting the telecommunication signal to the first processor (col 10 lines 56-59) and for receiving the value of the signal processing parameter from the first controller (col 7 lines 51-53), the system controller further connected for receiving the processed telecommunication signal from the first signal processor (processed signal leaves rightmost 648 module and goes to

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switching module portion of the system controller as noted in the col 9 reference above), and for transmitting the processed telecommunication signal as a transmitted signal (processed signal leaves switching module portion of the system controller and goes to interface module which interfaces with communications lines, hence the system controller both transmits and receives), a second signal processor for performing the signal processing function upon the telecommunication signal, and for producing a second processed telecommunication signal a second controller connected with the second processor (fig 6 left most item 648 is echo canceller element of target cell, col 12 lines 2-3, which behaves exactly like echo canceller element of present cell and has same architecture, including the controller, but in this case refer to the rightmost item 302 and items 310 and 314 within it), for providing a signal processing parameter to the second processor (col 7 lines 10-18, after which the parameter ultimately arrives at the echo cancellation element within the second processor as described in col 5 lines 56-61), the system controller further configured for transmitting the value of the signal processing parameter to the second controller (col 5 lines 56-61), and for replacing the transmitted signal with the second processed signal subsequent to transmitting the value of the signal processing parameter to the second controller (col 11 lines 63-65, channel is transferred so the processed signal transmitted to the wireless user from the echo canceller element of the present cell is replaced with the processed signal of the echo canceller element of the target cell).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 3, 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Statutory Invention Registration #H1,884 to Pruett et al. in view of U.S. Patent #5,987,098 to Wintour.

2. With regard to claims 3 and 5, Pruett discloses all aspects of the invention of claim 1 and further discloses that the signal processing parameter is a logical signal indicating whether echo cancellation is enabled on the channel (col 15 lines 49-64, where logic dictates that $u(i)$ will be zero if no signal is present, that if

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no signal is present then there can be no echo, and echo on a channel is an enabling prerequisite for echo cancellation so the act of echo cancellation is not enabled). Pruett also discloses that the signal processing parameter includes state variables defining the impulse response for the channel in which echo cancellation is enabled (echo cancellation will be enabled if $u(i)$ is non-zero, and $a(k)$ in the right hand side of the equation defines the impulse response of the channel). Pruett fails to disclose that the first processor is a multi-channel channel processor. However, Wintour discloses an echo cancellation system with multi-channel echo cancellers (fig 1 items 16, ECRM of col 2 lines 62-63). It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the multi-channel echo cancellers disclosed by Wintour with the echo cancellation system disclosed by Pruett to arrive at the invention of claim 3. The motivation to do so would have been to enhance the performance per unit cost of the echo cancellation system by using multi-channel echo cancellers which allow more throughput than non-multi-channel echo cancellers.

3. With regard to claim 9, Pruett discloses a first echo canceller module (fig 3 leftmost item 302) comprising an echo canceller (fig 3 leftmost and lowest item 310) item and a first controller (fig 3 leftmost item 314) configured for monitoring (col 7 lines 46-50, wherein the controller monitors as a prerequisite to the function "retrieve") a state of echo cancellation (echo cancellation algorithm variable data), a second echo canceller module (fig 3 rightmost item 302)

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comprising an echo canceller (fig 3 rightmost and lowest item 310) and a second controller configured for establishing a state of echo cancellation (col 7 lines 10-18, after which the parameter ultimately arrives at the echo cancellation element within the second processor as described in col 5 lines 56-61), and a system controller (combination of fig 3 items 306 and 304, illustrated also as fig 6 items 649 and 642) configured for selectively connecting the first and second echo cancellers to a telecommunication network (col 11 lines 63-65, channel is transferred so the processed signal transmitted to the wireless user from the echo canceller element of the present cell is replaced with the processed signal of the echo canceller element of the target cell, hence a selection is made), the system controller further configured for receiving (col 7 lines 10-13) and recording (it will transmit the echo cancellation state after receiving it so it must, if even for only a brief period of time, at least record it somewhere such as a shift register or buffer) from the first controller an indication of the echo cancellation state, and for transmitting to the second controller the recorded state indication (col 7 lines 13-15) such that the second echo canceller is established in operation in accordance with the recorded state information when it is connected by the system controller to the telecommunication network (col 6 lines 9-16) (fig 3 is used only to depict the internal elements of fig 6 items 648. It is made apparent in col 11 lines 59-60 that items 648 include an echo canceller element, and it is made apparent in col 11 lines 66-67 that items 648 include a controller). Pruetz fails to teach explicitly disclose that the echo cancellers be multi-channel echo cancellers and that the state of echo cancellation include each channel.

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However, Wintour discloses an echo cancellation system with redundant multi-channel echo canceller modules (fig 1 items 16, ECRM of col 2 lines 62-63) and a system controller (fig 1 item 10) and each echo canceller module having a controller (fig 3 item 42) and multi-channel echo canceller (fig 3 items 48a-j, and col 10 lines 56-57). It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the multi-channel echo cancellers disclosed by Wintour with the echo cancellation system disclosed by Pruett to arrive at the invention of claim 9. The motivation to do so would have been to enhance the performance per unit cost of the echo cancellation system by using multi-channel echo cancellers which allow more throughput than non-multi-channel echo cancellers.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent #5,987,098 to Wintour in view of U.S. Statutory Invention Registration #H1,884 to Pruett et al.

5. Wintour discloses a method of operating an echo cancellation system comprising connecting a first multi-channel echo canceller (fig 1 leftmost item 16, and col 10 lines 56-57) configured to selectively cancel echo in a plurality of telecommunication channels (col 2 lines 61-67) to a multi-channel telecommunication system (fig 1 item 20) that includes a system controller (fig 1 item 10), disconnecting the first multi-channel echo canceller from the telecommunications system and connecting the redundant multi-channel echo

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canceller to the telecommunication system (col 12 lines 27-34). However, Wintour discloses that the redundant multi-channel echo canceller must begin activity and wait a time period for the filters to converge (col 12 lines 5-11) and does not disclose monitoring, indicating, or transmitting the state condition of each channel. However, Pruett discloses a method of operating an echo canceling system including monitoring a state condition of echo cancellation in each channel (col 7 lines 46-50, wherein the controller monitors as a prerequisite to the function "retrieve"), indicating the state condition to a system controller (col 7 lines 51-53) and transmitting the state condition from the system controller to a redundant echo canceller (col 2 lines 14-24). It would have been obvious to one ordinarily skilled in the art at the time of the invention to include the monitor, indicating, and transmitting of the state condition of a channel disclosed by Pruett in the method disclosed by Wintour. The motivation would have been to eliminate the filter convergence waiting time of the redundant echo canceller disclosed by Wintour by providing a redundant echo canceller with the filter characteristics of the first echo canceller.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent #5,987,098 to Wintour in view of U.S. Statutory Invention Registration #H1,884 to Pruett et al. and further in view of U.S. Patent #6,430,162 to Reese et al.

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7. Wintour and Pruett disclose the invention of claim 7 but fail to disclose that the step of monitoring the state condition comprises whether echo cancellation is being applied to each of the channels. However, Reese discloses a system that performs a method of echo cancellation (fig 2 item 34b) monitors whether echo cancellation is being applied to each of the channels (identifying the channel or channels to which echo cancellation is to be applied) (col 4 lines 33-42). It would have been obvious to one ordinarily skilled in the art at the time of the invention to include the step of monitoring whether echo cancellation is being applied to each of the channels disclosed by Reese in the method of claim 7 to arrive at the invention of claim 8. The motivation to do so would have been that since the state condition is ultimately transferred to a redundant echo canceller and since Reese suggests that a controller instructs the echo processing system whether to activate or deactivate each channel, this feature would enhance the operation of the method of claim 7 by causing the redundant echo canceller to not cancel echo on channels on which it is not necessary, conserving processing resources in the redundant echo canceller for other functions.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Statutory Invention Registration #H1,884 to Pruett et al. in view of U.S. Patent #5,987,098 to Wintour and further in view of U.S. Patent #6,430,162 to Reese et al.

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9. Pruett and Wintour disclose the invention of claim 9 but fail to disclose that the first controller is configured to monitor the state of echo cancellation as an indicator of whether echo cancellation is being applied to each channel.

However, Reese discloses a first controller (fig 2 item 34b) that is configured to monitor the state of echo cancellation (identifying the channel or channels to which echo cancellation is to be applied) as an indicator of whether echo cancellation is being applied to each channel (instructing the echo processing system to activate or de-activate echo cancellation in accordance with such a determination) (col 4 lines 33-42). It would have been obvious to one ordinarily skilled in the art at the time of the invention to include the monitoring feature of the first controller disclosed by Reese in the first controller of claim 9 to arrive at the invention of claim 10. The motivation to do so would have been that since the first controller monitors the state of echo cancellation on each channel and since this state is transmitted ultimately to the second multi-channel echo canceller and since Reese suggests that a controller instructs the echo processing system whether to activate or deactivate each channel, this feature would enhance the operation of the system of claim 9 by not canceling echo in the second processor on channels on which it is not necessary, conserving processing resources in the second processor for other functions.

Allowable Subject Matter

10. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Gulli et al., (U.S. Patent #6,590,961), Call Protect Systems with Handoff Redundancy.

b. Stacey et al., (U.S. Patent #6,266,342), Adaption Resource Module and Operating Method Therefor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Heinrichs whose telephone number is 571-272-8397. The examiner can normally be reached on Monday through Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax


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phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



C. Heinrichs
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RICKY NGO
PRIMARY EXAMINER 4/26/05